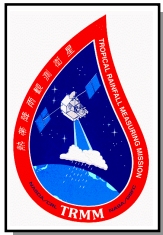


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# **TRMM Flight Operations Monthly Status Review (MSR)**

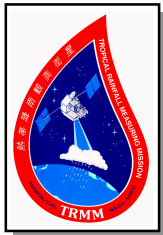
March 28th, 2001



# FOT Subsystem Overview

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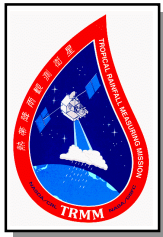
- Operations Status
  - Flight Ops Summary - Andy Calloway for Lou Kurzmilller
  - Electrical & Thermal - Andy Calloway
  - ACS & FDS / C&DH - Mark Fioravanti
  - RCS & RF / Comm - David Corley
  - Power & Deployables - Justin Knavel
  - LIS - Justin Knavel
  - CERES & VIRS - Mark Fioravanti
  - TMI - David Corley
  - PR - Andy Calloway
  - Ground System - Dan Palya
  - Upcoming Activities - Andy Calloway



# Flight Operations Summary

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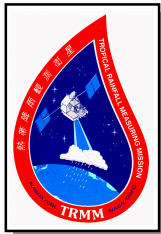
- Supported 556 SN events in March
  - 1 Yaw Maneuver
  - 10 Delta-V Maneuvers
- 1 Event Rpt; 5 Generic Late Acq Rpts generated
  - ER #227 MOC Operations: Blind Acq event added for VIRS Heater reconfiguration
  - 4 Late Acqs w/171 & 1 Late Acq TDS; no data loss



# Flight Operations Summary

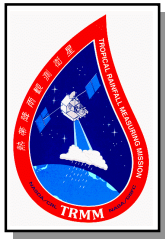
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- Notable Events
  - MOC updates:
    - » String-1 9 GB Home Disk replaced
    - » Final Conversion Device (CD2) upgrade to Linux s/w (SCD)
  - Release 9.0 tested on String-2
    - » To be installed on String 3
  - Successfully commanded TRMM from SOTA 7



# Flight Ops Summary

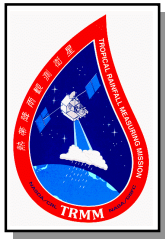
SPECIAL SPACECRAFT EVENTS AND ACTIVITIES FOR TRMM 2001													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTALS
2	8	7	10										25
2a	1	1	1										3
2b	0	0	0										0
2c	0	0	0										0
3	1	0	1										2
3a	1	4	2										7
3b	3	2	1										6
3c	1	1	1										3
3d	0	0	0										0
3e	1	0	0										1
3f	2	2	5										9
4	3	1	0										4
4a	0	2	2										4
4b	1	1	2										4
4c	0	0	0										0
4d	5	0	3										8
4e	0	0	0										0
5	3	0	2										5
5a	0	0	0										0
5b	0	5	0										5
5c	0	0	0										0
TOT:	30	26	30	0	0	0	0	0	0	0	0	0	86
LEGEND													
STANDARD CATEGORIES				TRMM-SPECIFIC SUB-CATEGORIES AND EXAMPLES									
1	Targets of Opportunity			N/A									
2	S/C Maneuvers			DeltaVs (2) , 180° Yaw Maneuvers (2a) , 90° Yaws (2b) , Deep Space Cals (2c)									
3	Unplanned Commanding			Blind Acqs (3) , Patch Loads (3a) , Manual DS Ops due to Blind Acqs, MI, etc. (3b) , EPVs Fail (3c) VIRS Reset Ops (3d) , Anomaly Recoveries (3e) , Generic Late Acqs - GCMRs / DS Ops (3f)									
4	Customer Requests			PR (4) , VIRS (4a) , LIS (4b) , CERES (4c) , FSW (4d) , AETD (4e)									
5	Ops due to Celestial Phenomena			UTCF / FS Ops (5) , Power Ops - Autospru, TSMs, C/D (5a) , Xpdr Offset Ops (5b) , Leonids (5c)									
6	Pre-Launch Testing			N/A									
7	L&IOC Operations			N/A									
8	EOL Operations			Delta-H Firings (8) , Reentry Maneuvers (8a)									
NOTE: This Record Documents S/C Activities and Does Not Include Other Special Activities Such as Ground System Testing, Simulations, Trending, or New Database, Script, Code, or Procedure Development...													



# Thermal / Electrical Subsystems

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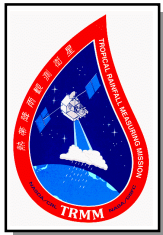
- Thermal subsystem remains nominal with no open issues
- No relay or other Electrical issues at this time



# ACS Subsystem

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- No change in subsystem status, continues to perform nominally.
- Planned Update for ACS tables for off-pointing the Solar Arrays
  - Off pointing by 60 Degrees.
  - Contingency should extended PPT operations be required.

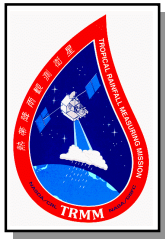


# ACS Subsystem

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- Open CCRs (In order of Priority);
  - CCR #069: New table 85 to match new TDRS-8 continuity limits for other TDRS, and another table 85 to widen the limits after an update failure.
  - CCR #070: New version of Table 61 to incrementally pitch the S/C while in Sun Acq, if Solar Array fails.
  - CCR #005: Correction for Magnetic Field Epoch, will be required for EOL if apogee is greater than 400 km.
  - CCR #065: Update ACS system tables in preparation for EOL activities.
    - » Table #73 (Thruster Parameters)
    - » Table #90 (Mode Configuration Data for Contingency)
  - CCR #053: ACS FS/W bug

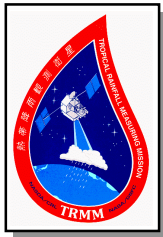




# FDS/C&DH Subsystems

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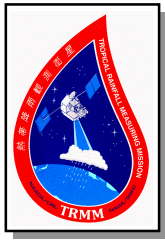
- New TSM table uplinked to RAM (S/C table #21) on 01-079
- Updated TSM Document delivered by FSW in March.
- UTCF Status;
  - Two Adjustments were performed. One on 01-060 (Thurs. March 1<sup>st</sup>), and the second on 01-077 (Sun. March 18<sup>th</sup>)
  - Current UTCF value is 31535996.828272 sec
  - No FS Adjustments were performed.
  - Current FS value is x'7BA'
- Open CCRs;
  - CCR #047: Will work with FSW on no-clock software patch activities
  - CCR #048: New on-board DS filter table to record ACE 8-Hz data
  - CCR #077: Create a TSM to monitor the bus voltage incase of a PSIB telemetry failure.



# RCS Subsystem

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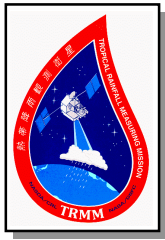
- RCS performed 10 successful Delta-V maneuvers (#280 - #289)
  - Current fuel remaining is 441.223 kg
- EOL estimate is approximately **March, 2003**, using 157kg of fuel as a baseline.
- No Open RCS Anomaly or Event Reports
- Upcoming Events
  - Begin review of, and training in, Delta-H procedures, EOL scripts, and a “one-shot” procedure.
  - Review all required steps for a 30+ minute Delta-V maneuver and test with the simulator.



# RF Subsystem

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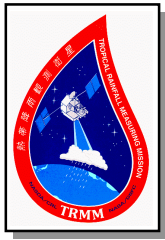
- 5 Generic Late Acquisitions (#84-88)
  - 072/170700z T171 event: Locked up @ 170901z. One fwd reacq was sent. Dump/pb were performed. All data recovered.
  - 077/190630z T171 event: Locked up @ 190750z. One fwd reacq was sent. Dump was performed. All data recovered.
  - 079/150700z T171 event: Locked up @ 150813z. One fwd reacq was sent. Dump/pb were performed. All data recovered.
  - 080/001229z T171 event: Locked up @ 001416z. One fwd reacq was sent. Dump/pb were performed. All data recovered.
  - 082/165600z TDS event: Locked up @ 165752z. One fwd reacq was sent. Dump was performed. All data recovered.



# RF Subsystem

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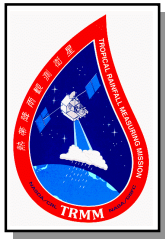
- Frequency offsets (monthly average)
  - Transponder #1 = +704.975 Hz
  - Transponder #2 = -824.568 Hz
- No RF Event Reports or MOCRS this month
- Upcoming Events
  - Offset of transponder 2 frequency likely in April.



# Power Subsystem

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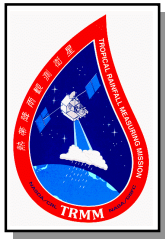
- PSIB Telemetry continues to be closely monitored. (No change)
- 01/078 (March 19th) - New TSM 41 to monitor S/C processor current (Essential Bus Voltage) was uplinked to RAM and enabled.
  - Only generates Event messages
- Off-pointing the Solar Arrays by 60°
  - ACS Table has been built
  - FSW is testing Table with the simulator.



# Deployables Subsystem

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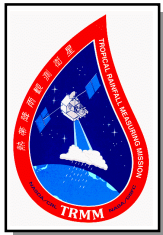
- Solar array drives and HGA continue to operate nominally.
- No other open issues.



# LIS Instrument

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- Two Routine MSFC real-time command requests performed on 01-060 (March 1st) and 01-079 (March 20th) to reduce packet sequence errors
- No open issues

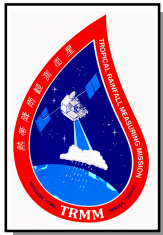


# CERES/VIRS Instruments

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- **CERES**, no change in status.
  - No Science collection due to, Data Acquisition Processor (DAP) Telemetry Drop Out and Possible Failure (Anomaly #81, 00-061 Jun 14<sup>th</sup>, 2000)
  - LaRC has no plans at this time for any tests.
  - Issues on Hiatus
    - » Continuous Biaxial operations
    - » DR on MP ground system to incorporate new CERES requirements
- **VIRS**, continues to operate nominally.
  - Two sets of VIRS Solar Calibrations were performed on 01-070 (Sun., March 11<sup>th</sup>).

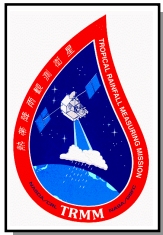




# TMI / PR Instruments

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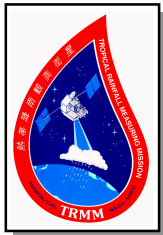
- No Open Issues with the TMI instrument
- No PR External Calibrations were performed in March
- No new PR interference was reported by NASDA in March
- Analysis is being conducted as to the feasibility of operating the PR instrument at an altitude of 400 km in order to extend mission life



# Ground System

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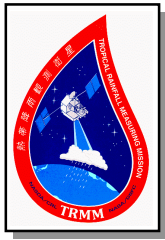
- The new System Software Release 9.0 has been checked out on String-2 and will be delivered to String-3 on 3/27. After one more week of evaluation, it will then be made operational on all three strings.
- The backup test and command string in Building 14 SOTA-7 is operational for emergencies and training. Full Mission Planning scheduling and load-building capabilities still need to be implemented and verified.
- All three IP Conversion Devices in the MOC have now been upgraded from an OS-2 based system (Programmable Telemetry Processors, PTPs) to a Linux based system (Small Conversion Devices, SCDs).
- PACOR-A secure gateways for schedule file transfers and level-0 data file transfers have been established, and will be tested next week. Operational parallel testing will commence upon delivery of dedicated PC.



# Ground System

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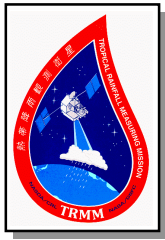
- Intermittent problems with MP system (integrated print report generation and sub-mnemonic fields) have been resolved.
- Installation of former GRO hardware will be conducted next week: 4 GB hd to SOTA for trending, 9 GB hd to MAR for trending, two 100 MHz CPUs to MOR/MAR.



# Upcoming Activities

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- 0-2 Months
  - Award two Spacecraft Analyst Certificates (Heefner/Corley)
  - Complete the full Backup Control Center implementation including scheduling and mission planning
  - Complete String 3 Rel 9.0 MP Checkout then deliver to String 1
  - Start using new FDF Product deliveries which incorporate TDRS-8 data; Start scheduling and testing with TDRS-8
  - Test and validate the new PACOR-A system
  - Test and install new Transponder-2 AOS Offset Relative Time Sequences
  - Install recently acquired GRO equipment - 4GB drive in SOTA, 9GB in MOR
  - Continue to close open CCRs, MOCRs, and MSR Action Items



# Upcoming Activities

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- 2-3 Months
  - Award Console Analyst certifications to both new employees
  - Complete testing and training with PSIB alternate telemetry patch
  - Complete testing and training with contingency SA 60° Offset configuration
  - Complete analysis for a potential patch which would increase the sampling limit for 'bad' GSACE data to limit affects with ACS
  - End Of Life Planning, Testing, and Simulations continue